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09/736,163	12/15/2000	Koichi Yoshimi	1614.1103	8082

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STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER	
O'BRIEN, BARRY J	
ART UNIT	**PAPER NUMBER**
2183	4

DATE MAILED: 11/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/736,163	YOSHIMI, KOICHI	
	Examiner	Art Unit	
	Barry J. O'Brien	2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 December 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Claims 1-18 have been examined.

Papers Submitted

2. It is hereby acknowledged that the following papers have been received and placed on record in the file: Priority Papers as received on 12/15/2000 and IDS as received on 12/15/2000.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

5. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:
(1) if a machine or apparatus, its organization and operation;

(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

Claim Objections

6. Claims 2, 6-8 and 11-12 are objected to because of the following informalities:

a. Regarding claim 2, please correct the claim language to read, "the method as claimed in claim 1, wherein the step c) further comprises" in order to put the claim in correct dependent form. Please see a similar correction in claim 6.

b. Regarding claims 6, 7 and 8, the claim language recites the limitation, "The unit as claimed in claim 5". There is no antecedent basis for the limitation "the unit". Please correct the claims to read "The arithmetic and logical unit as claimed in claim 5." Please see similar corrections in claims 11 and 12.

7. Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Shiell et al, U.S. Patent No. 6,108,775.

10. Regarding claims 1 and 5, taking claim 5 as exemplary, Shiell has taught a branch prediction method comprising the steps of:

a. Determining branch prediction data indicating a state of branch prediction according to whether a branch is actually made or not (see Col.8 lines 60-61 and Col.14 lines 52-55).

b. Performing a branch prediction according to the branch prediction data (see Col.8 lines 60-61 and Col.14 lines 55-58).

c. Correcting the branch prediction data according to whether a branch is actually made or not (see Col.9 lines 5-9, Col.13 lines 41-47 and Col.15 lines 12-24).

11. Claim 5 is nearly identical to claim 1 as shown above, differing only in it being comprised within an ALU, which Shiell has taught (see 10 of Fig.1), and in minor informalities in the claim language. Therefore, claim 5 is rejected for the same reasons as claim 1.

12. Regarding claims 2 and 6, taking claim 2 as exemplary, Shiell has taught the method as claimed in claim 1 above, wherein the step c) further comprises:

a. Selects a predetermined branch prediction-changing table from a plurality of branch prediction changing tables previously weighted according to a history of whether or not branches are actually made (see Col.10 lines 41-53, Col.13 lines 52-58 and Col.14 lines 27-46).

b. Reads therefrom branch prediction-updating data corresponding to the branch prediction data (see Col.10 lines 41-53 and Col.11 lines 8-31).

c. Determines the read branch prediction-updating data as a new branch prediction data (Col.14 lines 65-67 and Col.15 lines 1-7, 12-24).

13. Claim 6 is nearly identical to claim 2 as shown above, differing only in it being comprised within an ALU, which Shiell has taught (see 10 of Fig.1), and in minor informalities in the claim language. Therefore, claim 6 is rejected for the same reasons as claim 2.

14. Regarding claims 3 and 7, taking claim 3 as exemplary, Shiell has taught the method as claimed in claim 1 above, wherein the step c) comprises the steps of:

a. Obtaining branch prediction data corresponding to a branch instruction from a branch prediction table (see Col.3 lines 12-23).

b. Obtaining branch prediction supplementary data according to a history of whether or not branches are actually made (see Col.8 lines 20-27).

c. Selecting a branch prediction updating table corresponding to the branch prediction supplementary data from a plurality of branch prediction updating tables storing branch prediction data having different weights in transition directions of the branch prediction data, and outputting branch prediction updating data corresponding to the branch prediction data (see Col.10 lines 41-53, Col.13 lines 52-58 and Col.14 lines 27-46).

d. Updating the branch prediction table according to the branch prediction updating data of the branch prediction-updating table (see Col.9 lines 5-9, Col.13 lines 41-47 and Col.15 lines 12-24).

15. Claim 7 is nearly identical to claim 3 as shown above, differing only in it being comprised within an ALU, which Shiell has taught (see 10 of Fig. 1), and in minor informalities in the claim language. Therefore, claim 7 is rejected for the same reasons as claim 3.

16. Regarding claim 4, Shiell has taught the method as claimed in claim 1, wherein the step c) sets weightings in transition directions of the branch prediction data according to preset profile information (see Col.9 lines 5-9, Col.10 lines 17-27, 41-53, Col.14 lines 47-67 and Col.15 lines 1-7).

17. Claim 8 is nearly identical to claim 4 as shown above, differing only in it being comprised within an ALU, which Shiell has taught (see 10 of Fig. 1), and in minor informalities in the claim language. Therefore, claim 8 is rejected for the same reasons as claim 4.

18. Regarding claim 9, Shiell has taught an information processing apparatus comprising the arithmetic and logic unit claimed in claim 5 (see Fig. 1 and Col.5 lines 15-18).

19. Regarding claims 10, 13 and 16, taking claim 10 as exemplary, Shiell has taught an arithmetic and logic unit comprising:

a. A first part performing a branch prediction in response to a branch instruction (see Col.7 lines 54-58 and Col.8 lines 20-27).

b. A second part updating a transition probability of branch prediction according to whether a branch is actually made or not (see Col.9 lines 5-9, Col.13 lines 41-47 and Col.15 lines 12-24).

c. A third part detecting that a process is switched (see Col.16 lines 15-48).

d. A fourth part initializing the branch prediction information when said third part detects that the process is switched (see Col.8 lines 27-37, 56-59 and Col.16 lines 39-43).

20. Claims 13 and 16 are nearly identical to claim 10, each differing only in minor informalities in their claim language. Therefore, claims 13 and 16 are rejected for the same reasons as claim 10.

21. Regarding claims 11, 14 and 17, taking claim 11 as exemplary, Shiell has taught the unit as claimed in claim 10 above, wherein said fourth part performs initialization based on prediction information given to the branch instruction (see Col.8 lines 27-37, 56-59).

22. Claims 14 and 17 are nearly identical to claim 11, each differing only in minor informalities in their claim language. Therefore, claims 14 and 17 are rejected for the same reasons as claim 11.

23. Regarding claims 12, 15 and 18, taking claim 12 as exemplary, Shiell has taught the unit as claimed in claim 10 above, wherein said fourth part performs initialization according to a branch destination of the branch instruction (see Col.8 lines 27-37, 56-59, Col.10 lines 8-11, 41-53).

24. Claims 15 and 18 are nearly identical to claim 12, each differing only in minor informalities in their claim language. Therefore, claims 15 and 18 are rejected for the same reasons as claim 12.

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is reminded that in amending in response to a rejection of claims, the patentable novelty must be clearly shown in view of the state of the art disclosed by the references cited and the objections made. Applicant must also show how the amendments avoid such references and objections. See 37 CFR § 1.111(c).

26. Zuraski, Jr. et al, U.S. Patent No. 6,502,188 has taught the storing of branch prediction information and weighting of branch predictions.

27. Tran, U.S. Patent No. 5,822,575, has taught the storing of branch prediction information that can be routed throughout the pipeline to accompany a branch instruction.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry J. O'Brien whose telephone number is (703) 305-5864. The examiner can normally be reached on Mon.-Fri. 7am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (703) 305-9712. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Barry J. O'Brien
Examiner
Art Unit 2183

BJO
10/29/2003

EDDIE CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100